

Notice of Allowability

Application No.

10/709,747

Examiner

Michael Trinh

Applicant(s)

COONEY ET AL.

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Election filed 8/26/05 and Interview 9/27/05.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 5-26-04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Michael Trinh
Primary Examiner

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DETAILED ACTION

*** This office action is in response to Applicant's election filed on August 26, 2005. Claims 1-19 are pending, in which claim 19 are non-elected, with traverse. Claim 19 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this Examiner's Amendment was given in a telephone interview with Mr. Peter Peterson on September 27, 2005 to cancel non-elected claim 19.

IN THE CLAIM:

** Cancel claim 19.

IN THE SPECIFICATION: (just for correcting a typing error of numeral reference)

** In the specification, line 2 of paragraph [0049], change "dielectric layer 22" to --dielectric layer 20--.

Allowable Subject Matter

3. Claims 1-18 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter:

The references of record including Ni et al (6,548,348), Catabay et al (6,537,896), Heiliger (2005/0148202), etc., alone or in combination, do not fairly anticipatively disclose each and every aspect of the claimed method, or fairly make a prima facie obvious case of the claimed method for closing exposed pores in a porous dielectric layer, in combination with other processing claimed limitations as recited in base claims, the inclusion of, as in claim 1, providing

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a second reactant into a mouth region of the at least one exposed pore of a low-k porous dielectric layer while simultaneously out-gassing the first reactant toward the mouth region; generating an in-situ chemical reaction at the mouth region by contacting the second reactant with the outgassed first reactant; and forming a pore-closing layer across the mouth region via the in-situ chemical reaction to transform the at least one exposed pore to at least one closed pore having porosity; and

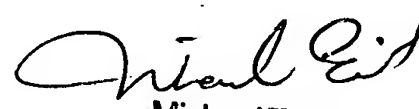
as in claim 15, the inclusion of patterning the low-k dielectric layer to form openings; providing a first reactant within the exposed pores in the openings of the low-k dielectric layer; providing a second reactant into the openings, the second reactant at least being introduced into a mouth region of each the exposed pore while simultaneously out-gassing the first reactant toward the mouth region; generating an in-situ chemical reaction at least at the mouth region of each of the exposed pore by contacting the second reactant with the outgassed first reactant; and forming a pore-closing layer across the mouth region via the in-situ chemical reaction to transform the exposed pores to closed pores.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 8:30 Am to 5:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone numbers for the organization where this application proceeding is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Oacs-18,19


Michael Trinh
Primary Examiner